

# 12A02CH-TL-E Datasheet



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DiGi Electronics Part Number	12A02CH-TL-E-DG
Manufacturer	<a href="#">onsemi</a>
Manufacturer Product Number	12A02CH-TL-E
Description	TRANS PNP 12V 1A 3CPH
Detailed Description	Bipolar (BJT) Transistor PNP 12 V 1 A 450MHz 700 mW Surface Mount 3-CPH



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## Purchase and inquiry

Manufacturer Product Number:

12A02CH-TL-E

Series:

-

Transistor Type:

PNP

Voltage - Collector Emitter Breakdown (Max):

12 V

Current - Collector Cutoff (Max):

100nA (ICBO)

Power - Max:

700 mW

Operating Temperature:

150°C (TJ)

Package / Case:

SC-96

Base Product Number:

12A02

Manufacturer:

onsemi

Product Status:

Obsolete

Current - Collector (Ic) (Max):

1 A

Vce Saturation (Max) @ Ib, Ic:

240mV @ 20mA, 400mA

DC Current Gain (hFE) (Min) @ Ic, Vce:

300 @ 10mA, 2V

Frequency - Transition:

450MHz

Mounting Type:

Surface Mount

Supplier Device Package:

3-CPH

## Environmental & Export classification

RoHS Status:

ROHS3 Compliant

REACH Status:

REACH Unaffected

HTSUS:

8541.21.0075

Moisture Sensitivity Level (MSL):

1 (Unlimited)

ECCN:

EAR99

Ordering number : EN7482A



# 12A02CH

## Bipolar Transistor -12V, -1A, Low VCE(sat) PNP Single CPH3

ON Semiconductor®

<http://onsemi.com>

### Applications

- Low-frequency Amplifier, high-speed switching, small motor drive, muting circuit

### Features

- Large current capacity
- Low collector-to-emitter saturation voltage (resistance)  $R_{CE(sat)}$  typ.=285mΩ [ $I_C=1A$ ,  $I_B=50mA$ ]
- Small ON-resistance ( $R_{on}$ )

### Specifications

#### Absolute Maximum Ratings at $T_a=25^\circ C$

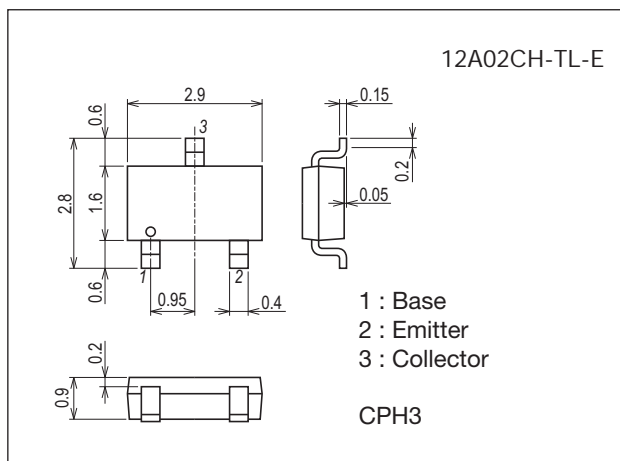
Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	$V_{CBO}$		-15	V
Collector-to-Emitter Voltage	$V_{CEO}$		-12	V
Emitter-to-Base Voltage	$V_{EBO}$		-5	V
Collector Current	$I_C$		-1	A
Collector Current (Pulse)	$I_{CP}$		-2	A
Collector Dissipation	PC	Mounted on a ceramic board (600mm <sup>2</sup> ×0.8mm)	700	mW
Junction Temperature	$T_j$		150	°C
Storage Temperature	$T_{stg}$		-55 to +150	°C

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

### Package Dimensions

unit : mm (typ)

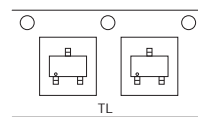
7015A-003



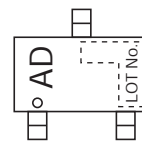
### Product & Package Information

- Package : CPH3
- JEITA, JEDEC : SC-59, TO-236, SOT-23
- Minimum Packing Quantity : 3,000 pcs./reel

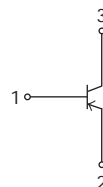
### Packing Type: TL



### Marking



### Electrical Connection

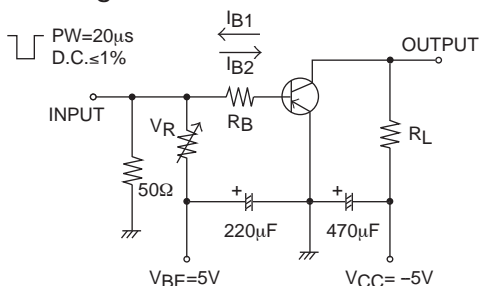


# 12A02CH

## Electrical Characteristics at Ta=25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	ICBO	V <sub>CB</sub> = -12V, I <sub>E</sub> = 0A			-100	nA
Emitter Cutoff Current	I <sub>EBO</sub>	V <sub>EB</sub> = -4V, I <sub>C</sub> = 0A			-100	nA
DC Current Gain	h <sub>FE</sub>	V <sub>CE</sub> = -2V, I <sub>C</sub> = -10mA	300		700	
Gain-Bandwidth Product	f <sub>T</sub>	V <sub>CE</sub> = -2V, I <sub>C</sub> = -50mA		450		MHz
Output Capacitance	C <sub>ob</sub>	V <sub>CB</sub> = -10V, f = 1MHz		6		pF
Collector-to-Emitter Saturation Voltage	V <sub>CE(sat)</sub>	I <sub>C</sub> = -400mA, I <sub>B</sub> = -20mA		-120	-240	mV
Base-to-Emitter Saturation Voltage	V <sub>BE(sat)</sub>	I <sub>C</sub> = -400mA, I <sub>B</sub> = -20mA		-0.9	-1.2	mV
Collector-to-Base Breakdown Voltage	V <sub>(BR)CBO</sub>	I <sub>C</sub> = -10μA, I <sub>E</sub> = 0A	-15			V
Collector-to-Emitter Breakdown Voltage	V <sub>(BR)CEO</sub>	I <sub>C</sub> = -1mA, R <sub>BE</sub> = ∞	-12			V
Emitter-to-Base Breakdown Voltage	V <sub>(BR)EBO</sub>	I <sub>E</sub> = -10μA, I <sub>C</sub> = 0A	-5			V
Turn-On Time	t <sub>on</sub>	See specified Test Circuit.		30		ns
Storage Time	t <sub>stg</sub>			75		ns
Fall Time	t <sub>f</sub>			15		ns

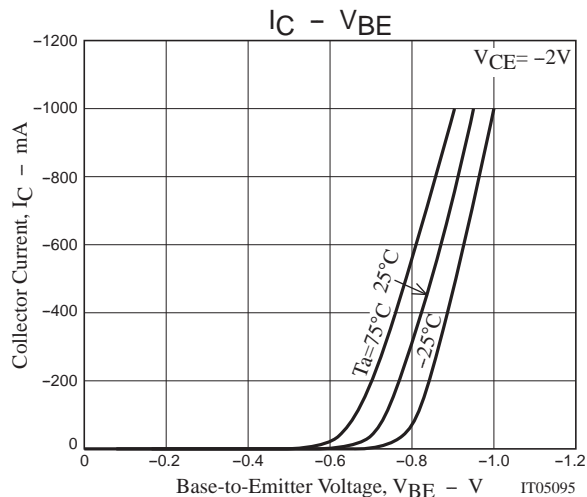
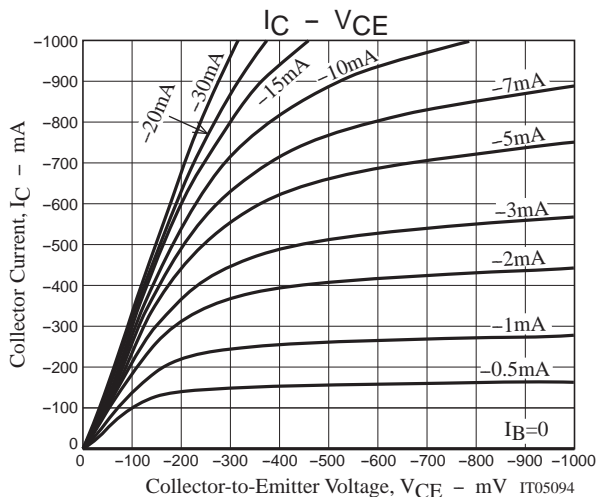
## Switching Time Test Circuit



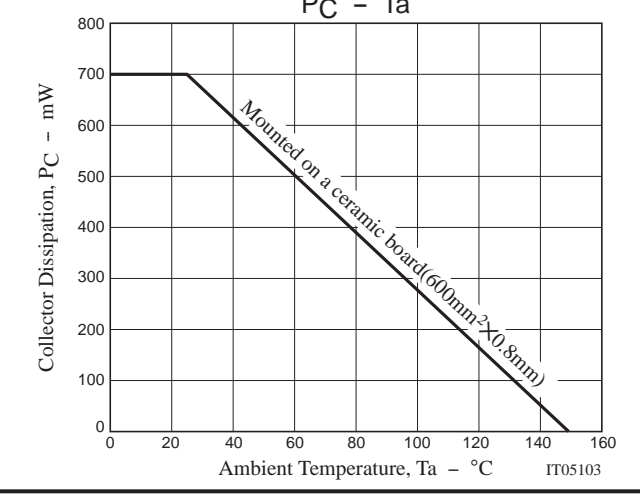
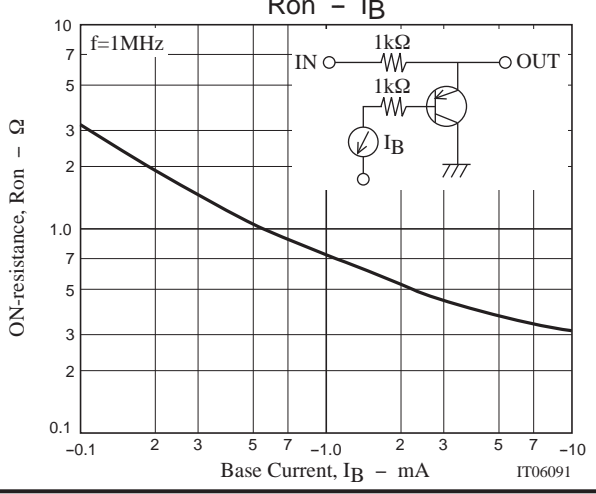
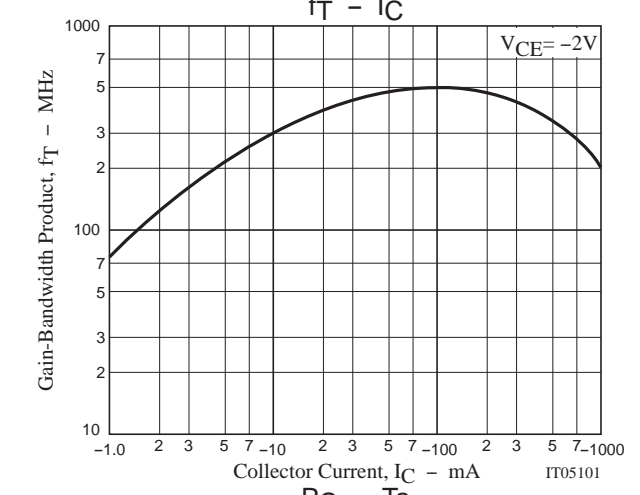
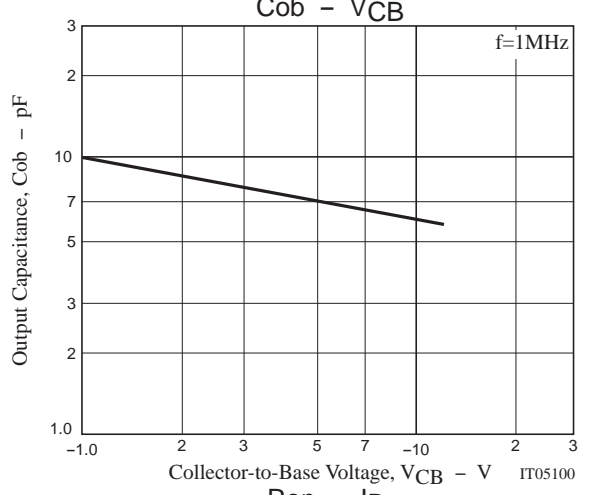
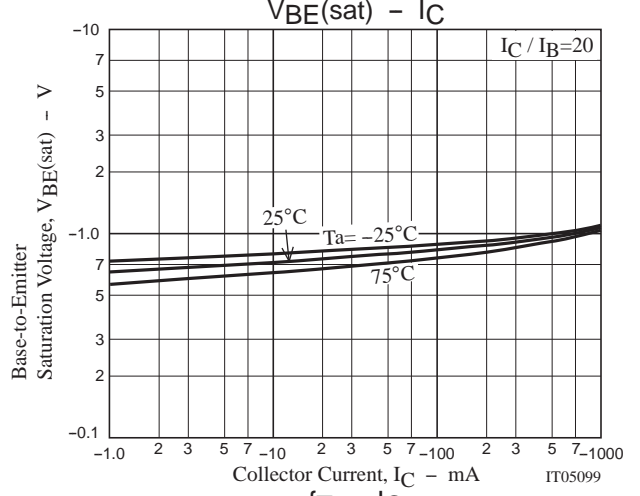
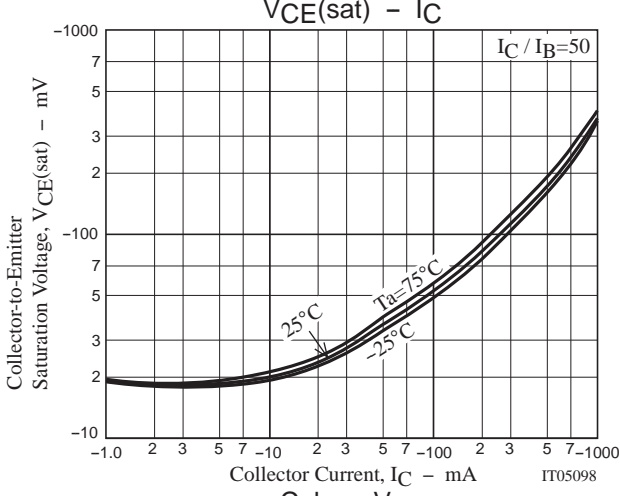
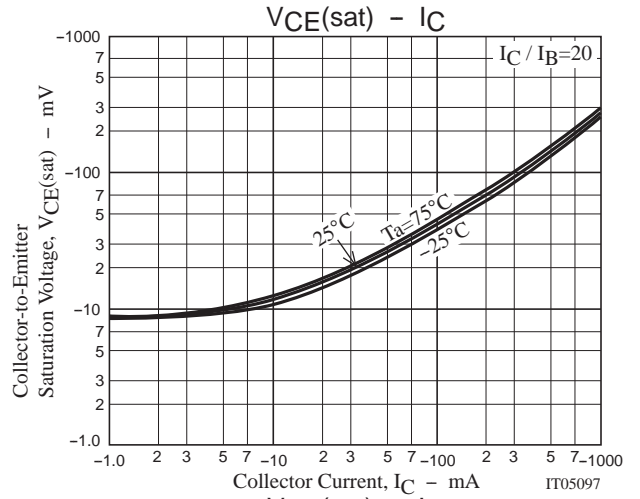
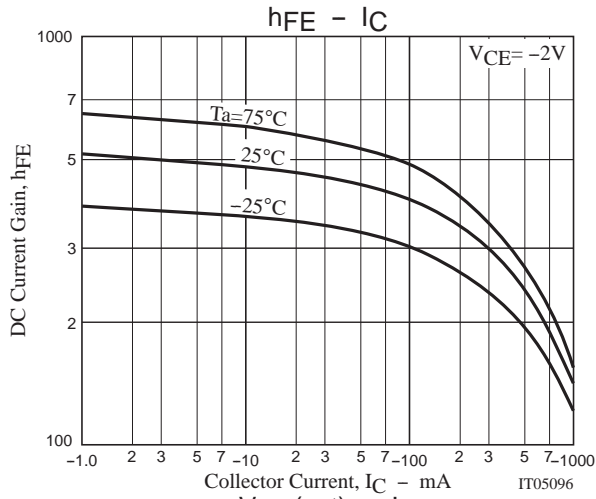
$I_C = 20I_{B1} = -20I_{B2} = -400\text{mA}$

## Ordering Information

Device	Package	Shipping	memo
12A02CH-TL-E	CPH3	3,000pcs./reel	Pb Free



# 12A02CH



# 12A02CH

## Embossed Taping Specification

### 12A02CH-TL-E

#### 1. Packing Format

Package Name	Carrier Tape Type	Maximum Number of devices contained (pcs)			Packing format	
		Reel	Inner box	Outer box	Inner BOX (C-1)	Outer BOX (A-7)
CPH3	CPH3	3,000	15,000	90,000	5 reels contained Dimensions:mm (external) 183×72×185	6 inner boxes contained Dimensions:mm (external) 440×195×210

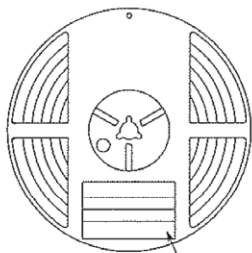
Reel label, Inner box label

(unit:mm)

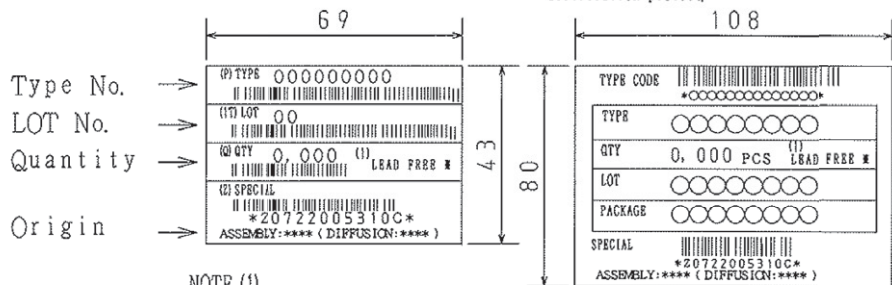
Outer box label

It is a label at the time of factory shipments. The form of a label may change in physical distribution process.

#### Packing method



Reel label



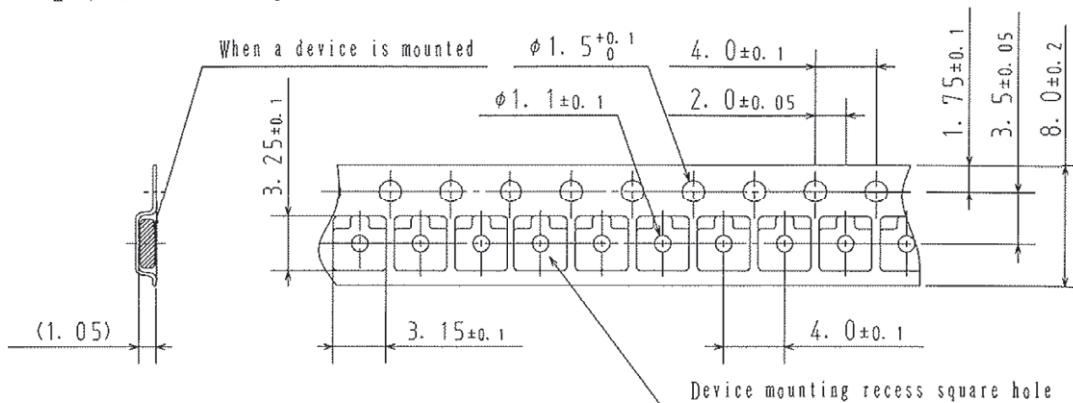
NOTE (1)

The LEAD FREE \* description shows that the surface treatment of the terminal is lead free.

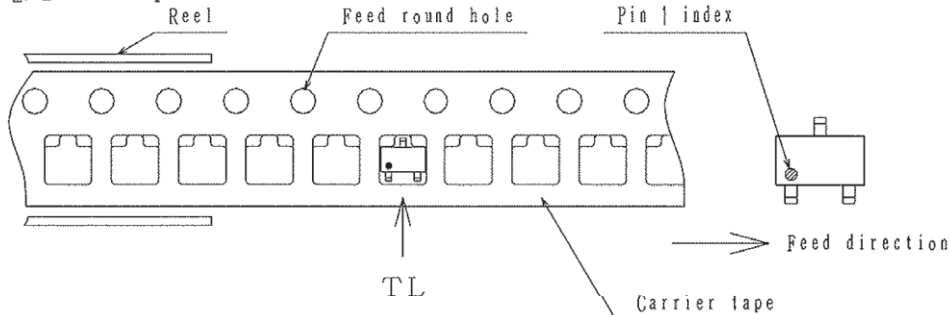
Label	JEITA Phase
LEAD FREE 3	JEITA Phase 3A
LEAD FREE 4	JEITA Phase 3

#### 2. Taping configuration

##### 2-1. Carrier tape size (unit:mm)



##### 2-2. Device placement direction

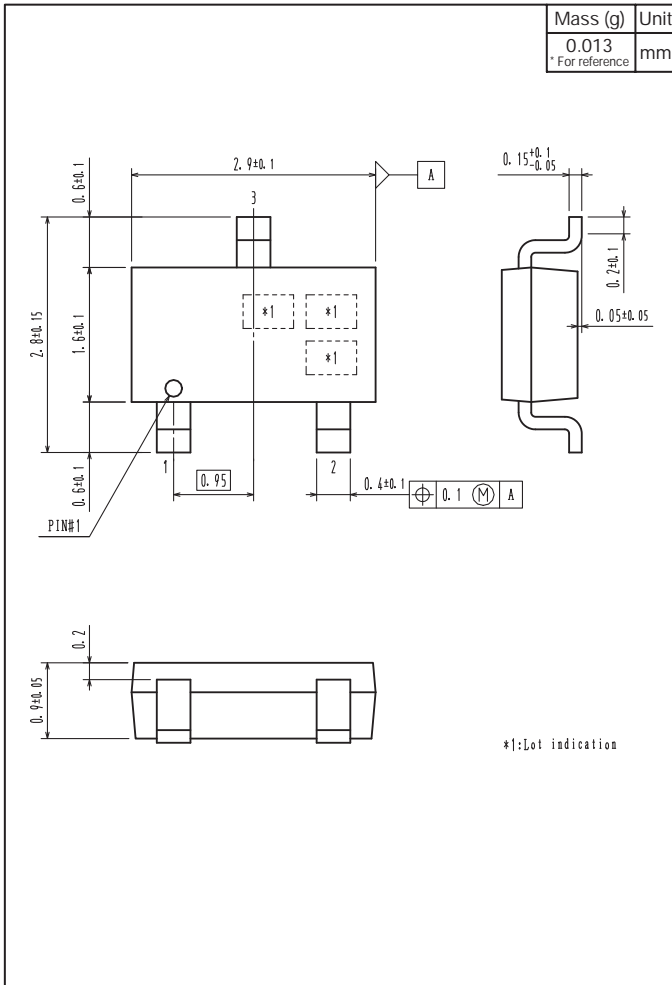


Those with one electrode terminal on the feed hole side.....TL

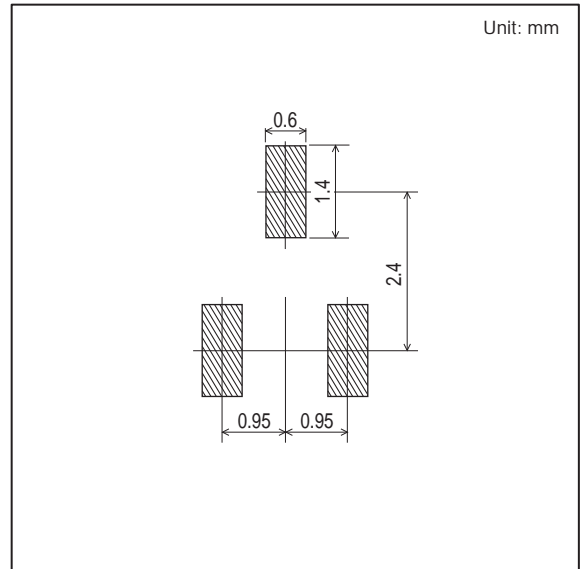
# 12A02CH

## Outline Drawing

12A02CH-TL-E



## Land Pattern Example



## 12A02CH

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